Wireless E9-1-1 and VoIP E9-1-1 Statewide Deployments

California 9-1-1 Office

Mr. William E. Harry, ENP (Wireless)

Mrs. Donna L. Pena, PMP, ENP (VoIP)

California APCO Training Conference and Exposition

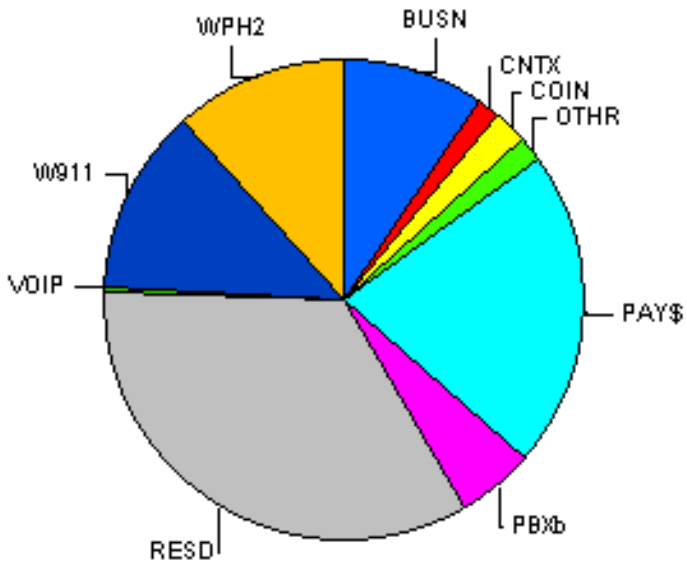
Ontario, CA

May 3, 2006

Agenda

- CA E9-1-1 Call Types/Network Overview
- Wireless E9-1-1 Deployment
  - Background, Status, Issues
- VoIP E9-1-1 Deployment
  - Background, Status, Issues
- Comparisons
- Questions

CA E 9-1-1 Call Types



BUSN	9.5%
CNTX	1.6%
COIN	2.3%
OTHR	1.6%
PAY$	21.4%
PBXb	5.3%
RESD	33.9%
VOIP	0.3%
W911	12.3%
WPH2	11.7%
Total:	100.0%

PSAP: **1338** **Anaheim Police**

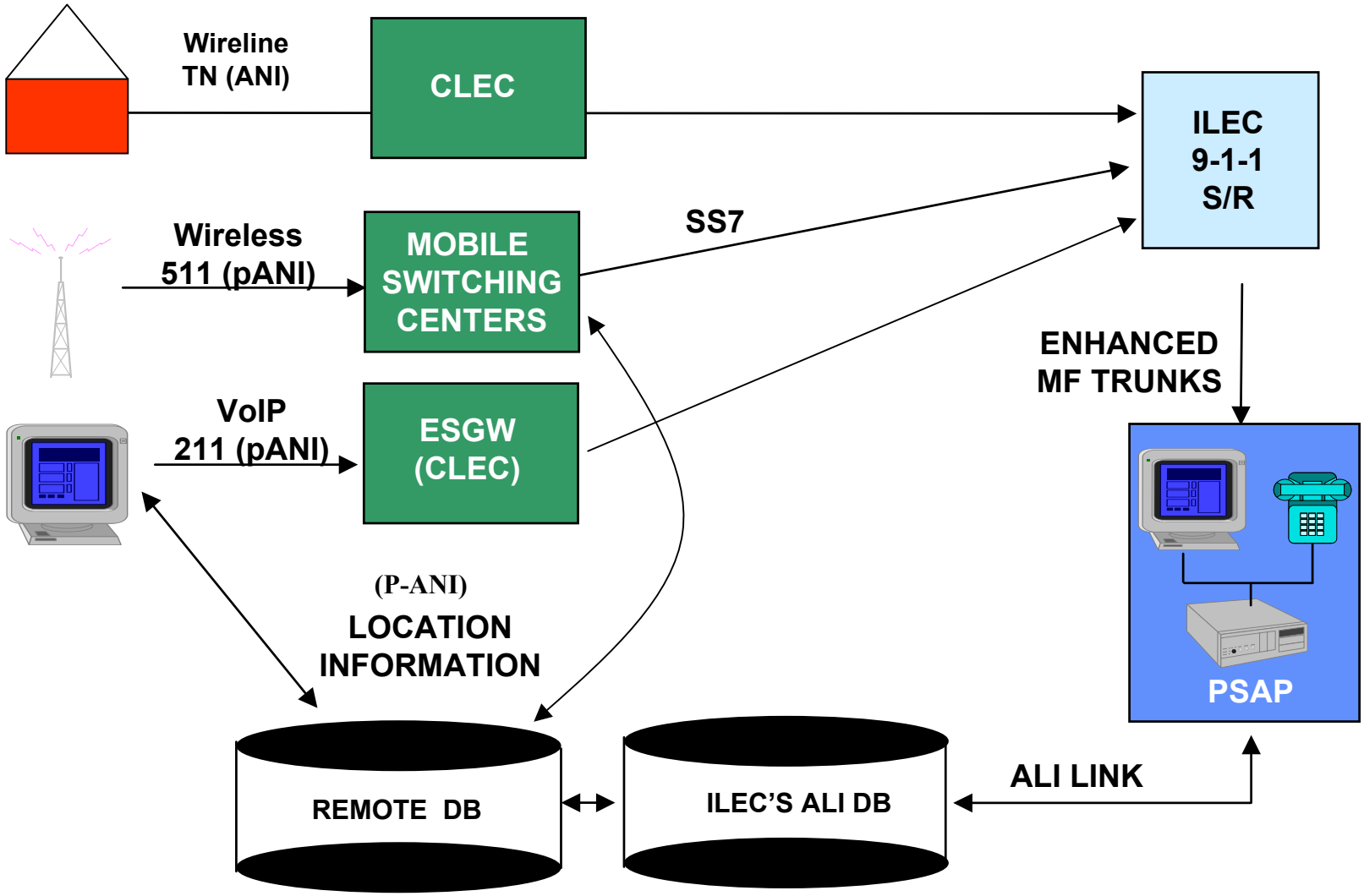
Source Phone Type

4/23/2006 thru 4/29/2006

911 Calls

	BUSN	CNTX	COIN	OTHR	PAY$	PBXb	RESD	VOIP	W911	WPH2	Total
Total	**190**	**33**	**47**	**32**	**429**	**106**	**682**	**7**	**247**	**236**	**2,009**

CA E9-1-1Network Overview



Wireless E9-1-1 Deployment

CA Wireless E9-1-1 Objective

To implement and maintain the capability to deliver wireless emergency phone calls to the appropriate PSAP with caller identification and location information.

CA Wireless E9-1-1 Wireless Statistics

- Cellular Subscribers grew from 16 million in 1994 to 207.9 million in 2006.*
- 69% of US population use cell phones.*
- 6% of US households are “wireless only.”*
- In CA in 2005, of the 20 million 9-1-1calls, more than half were wireless.

*CTIA “Wireless Quick Facts” April 2006.

CA Wireless E9-1-1
FCC Order & CA Statutes

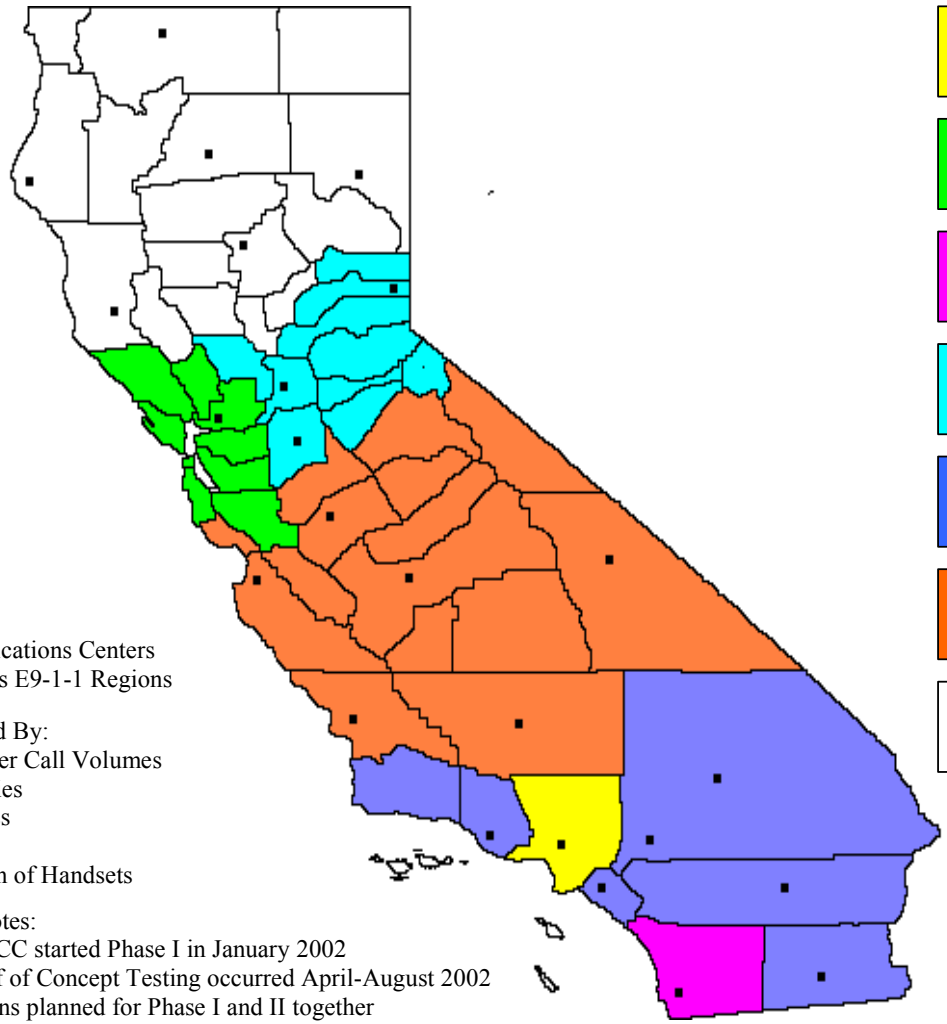
- FCC Order 94-102
  - Wireless Service Providers (WSPs) must be ready to deliver:
    - » Phase I - Callback Number, Cell Site & Sector
    - » Phase II - Latitude and longitude coordinates.
  - Timelines vary by WSP, but all must be fully Phase II compliant by end of 2005.
  - http://www.fcc.gov/911/enhanced/
- CPUC Section 2892

CA W E9-1-1 Stakeholders

- 475 Local Wire-line PSAPS "Enhanced 9-1-1"
- 24 CHP Centers
  - No ANI/ALI (7-digit PSTN with "Caller ID")
- 15 Wireless Carriers (6 Major)
- 2 Data Base Providers – Intrado, TCS
- 3 Landline E9-1-1 Providers – AT&T, Verizon, Frontier
- 18 Wireless Regional Coordinators

DGS, Telecommunications Division
State 9-1-1 Office

State of California
Wireless E9-1-1 Statewide Plan Map



Los Angeles Region
Started 1st Quarter 2003

San Francisco Bay Area Region
Started 3rd Quarter 2003

San Diego Region
Started 2nd Quarter 2004

Sacramento Region
Started 4th Quarter in 2004

Southland Region
Started 1st Quarter 2005

Central Region
Started 1st Quarter 2006

Northern Region
Projected to Start in 2006

Map Depicts:
-58 Counties
-24 CHP Communications Centers
-7 Defined Wireless E9-1-1 Regions

Rollout Determined By:
-CHP Comm. Center Call Volumes
-Population Densities
-Network Readiness
-PSAP Readiness
-Market Penetration of Handsets

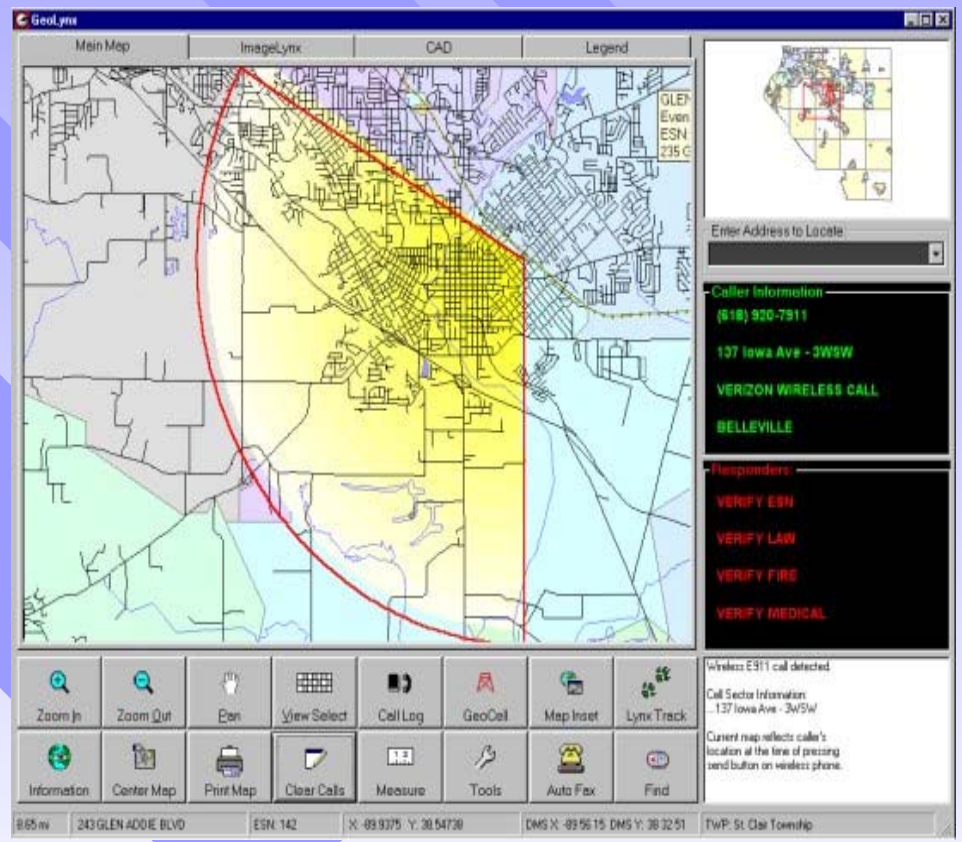
Implementation Notes:
-San Francisco CECC started Phase I in January 2002
-Los Angeles Proof of Concept Testing occurred April-August 2002
-All implementations planned for Phase I and II together
-Date indicates start of deployment

CA Wireless E9-1-1 Status

- # PSAPs participating – 335
- # PSAPs deployed - 140
- #PSAPs complete (with all WSPs) - 23
- # PSAPs not participating – 78
- # Cell Sectors Cut Over – 39,584 (60.9%)

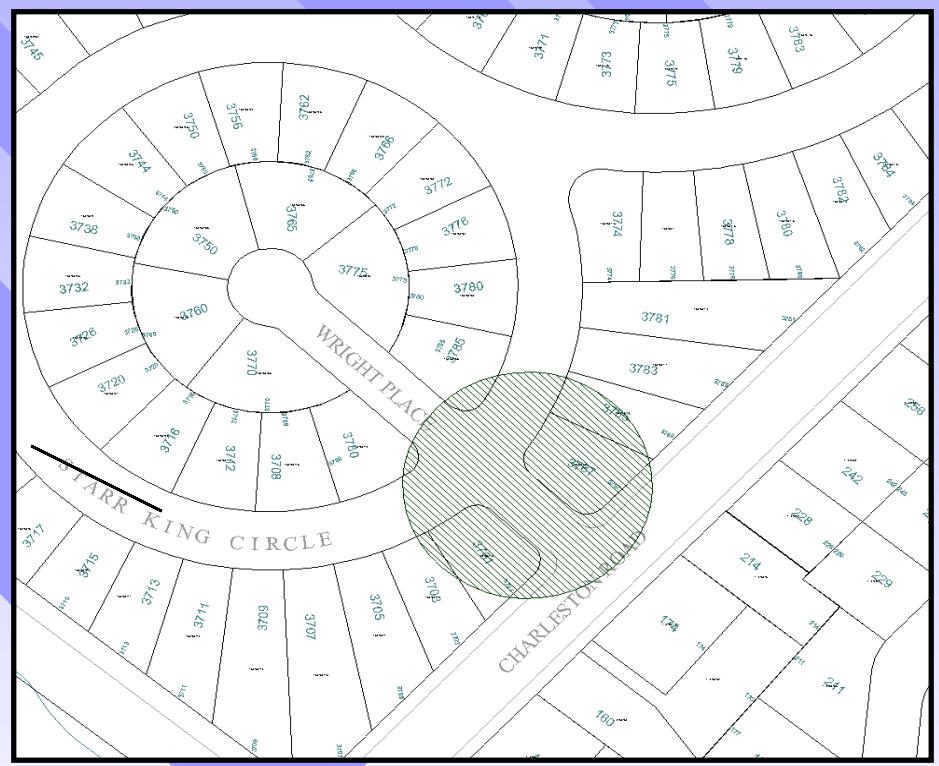
Wireless Phase I Call Information

- **The Phase I lat/long coordinates display the cell site location.**
- **The caller's location is probably within a cell sector of that site.**
- **Cell site in urban areas have a range of about one mile although they can extend significantly farther.**

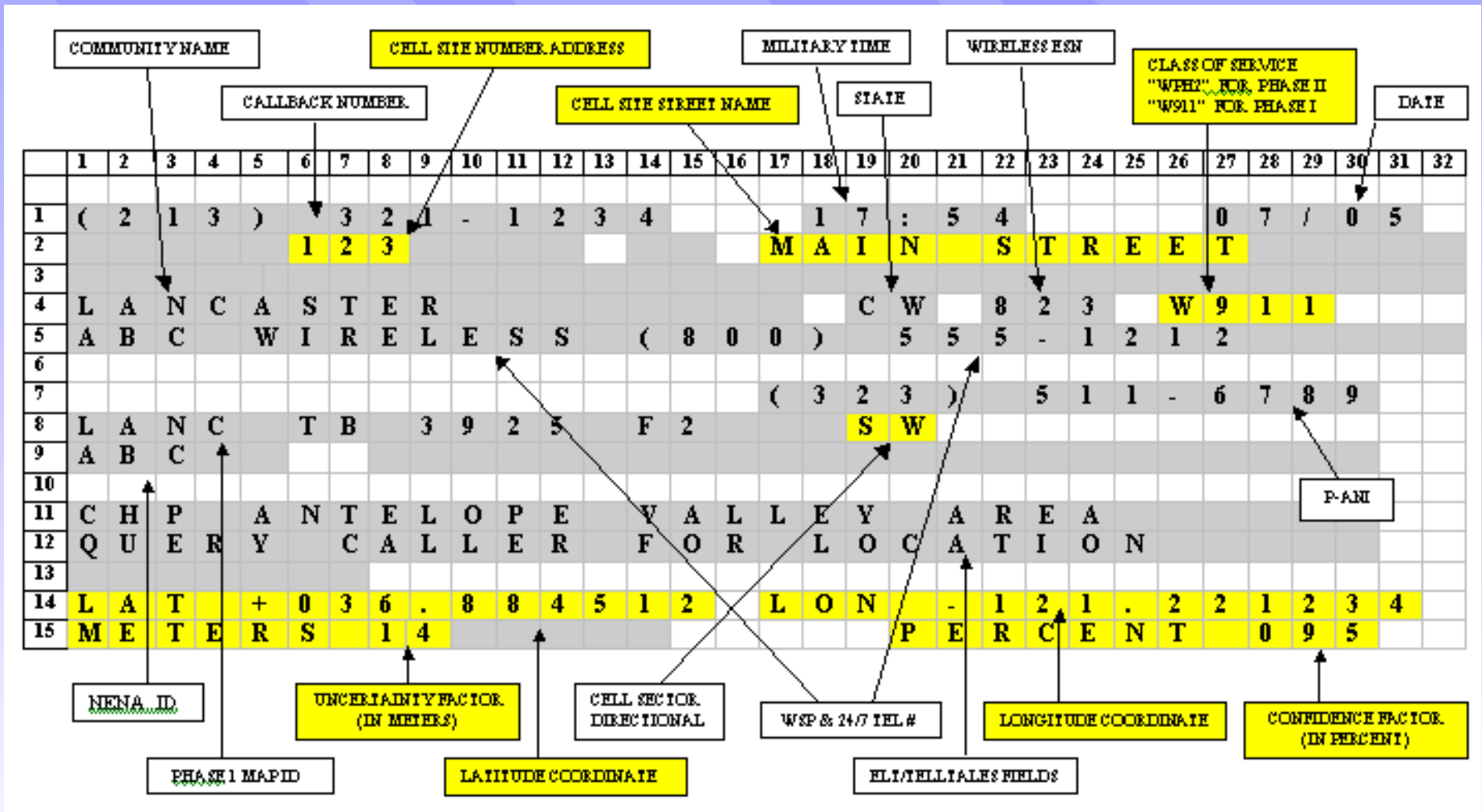


Wireless Phase II Call Information

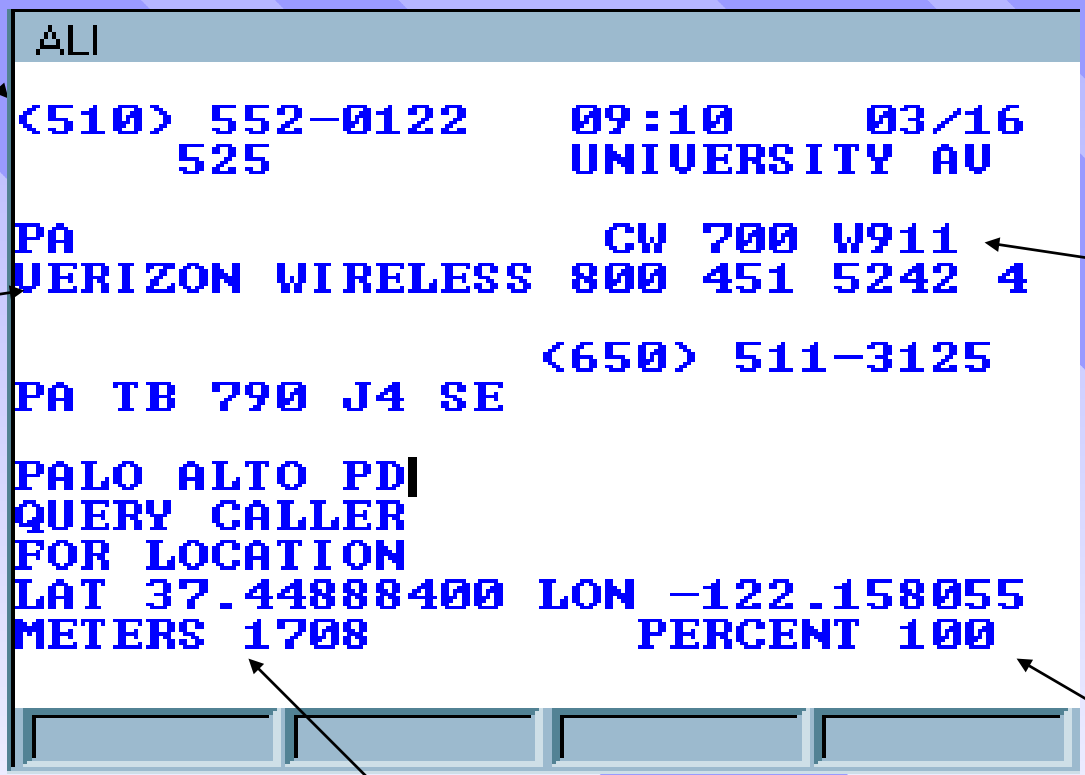
- **The Phase II lat/long coordinates display the more accurate location of the caller.**
- **The caller's actual location will be within a radius in meters from the lat/long.**
- **That radius is indicated in the uncertainty field**



CA Wireless E9-1-1 ALI Display



Phase I ALI Display



Subscriber's Number

Wireless Service Provider and

24 X 7 contact number

Cell Site Address

Class of Service

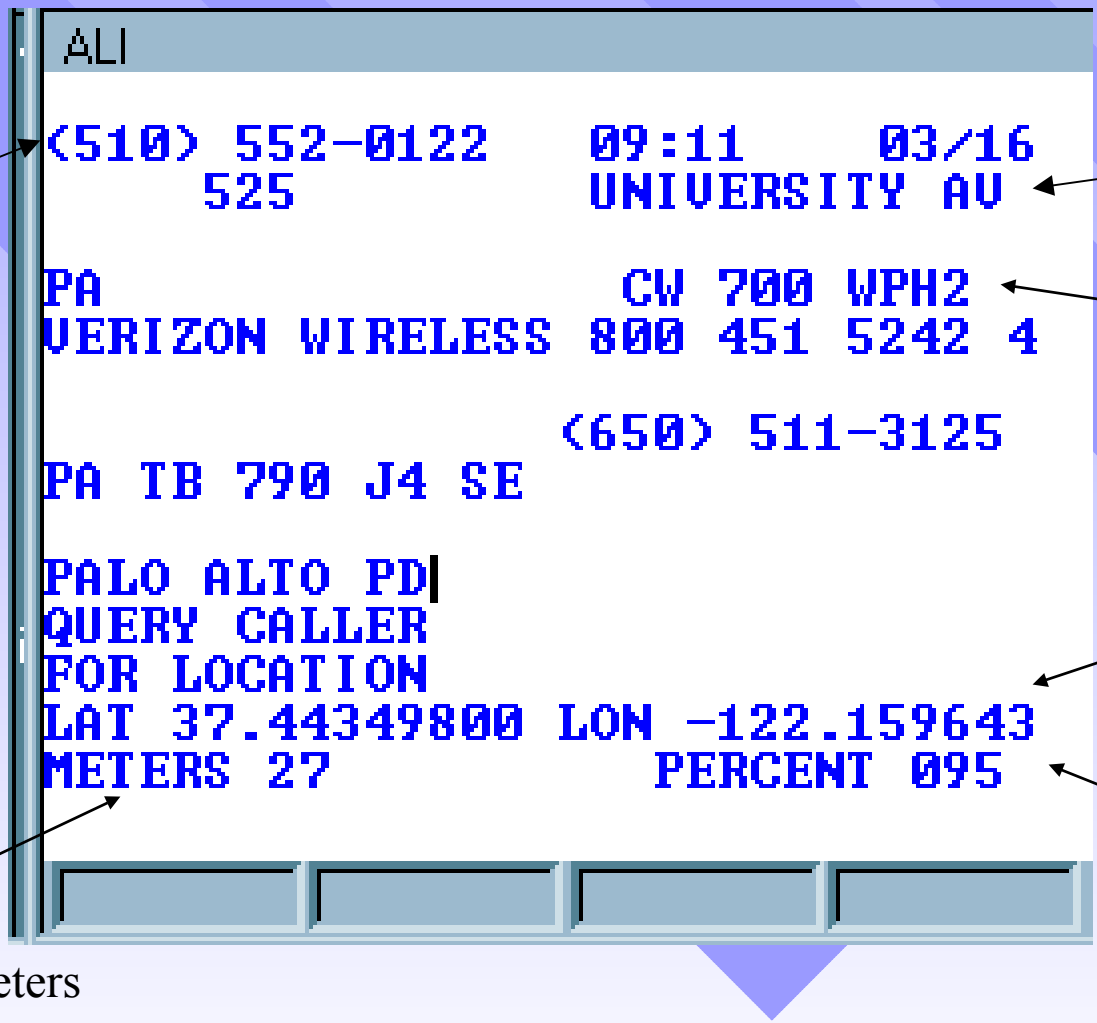
Lat/Long of Cell Site

Thomas Brother's Map location of Cell Site

Uncertainty in meters

Confidence in Percent

Phase II ALI Display



Subscriber's Number

Cell Tower address

Class of Service

Latitude/ Longitude (Location of Caller)

Uncertainty in Meters

Confidence in Percentage

PSAP Readiness

- CPE - Phase II Compatibility
  - Accommodate W-ALI Display (Format 03 or 04)
  - 10/20 Digit Capable
  - Ability to Re-Bid ALI for Phase II & Location Updates
- CAD Interface
  - Will CAD accommodate new W-ALI Format?
  - Fallback is to receive Phase I only.
  - Can be funded out of GIS allotment.
- GIS
  - Not required to be considered ready.
  - PSAP must submit GIS Plan to obtain funding.

CA Wireless E9-1-1 Issues

- New State Call Routing Law (1/06)
- Participation of Local Agencies
- PSAP E9-1-1 Upgrades
- GIS Funding
- ILEC/WSP 9-1-1 Network Design
- Deployment Scheduling
- Maintenance

VoIP E9-1-1 Deployment

CA VoIP E9-1-1 Objective

Our mission, together with the local exchange carriers, PSAPs, VSPs, VPCs, and ESGWs, on this deployment is to implement the best "comparable E9-1-1" service for the VoIP user that calls 9-1-1 in California and keep the network reliable and dependable.

VoIP Background

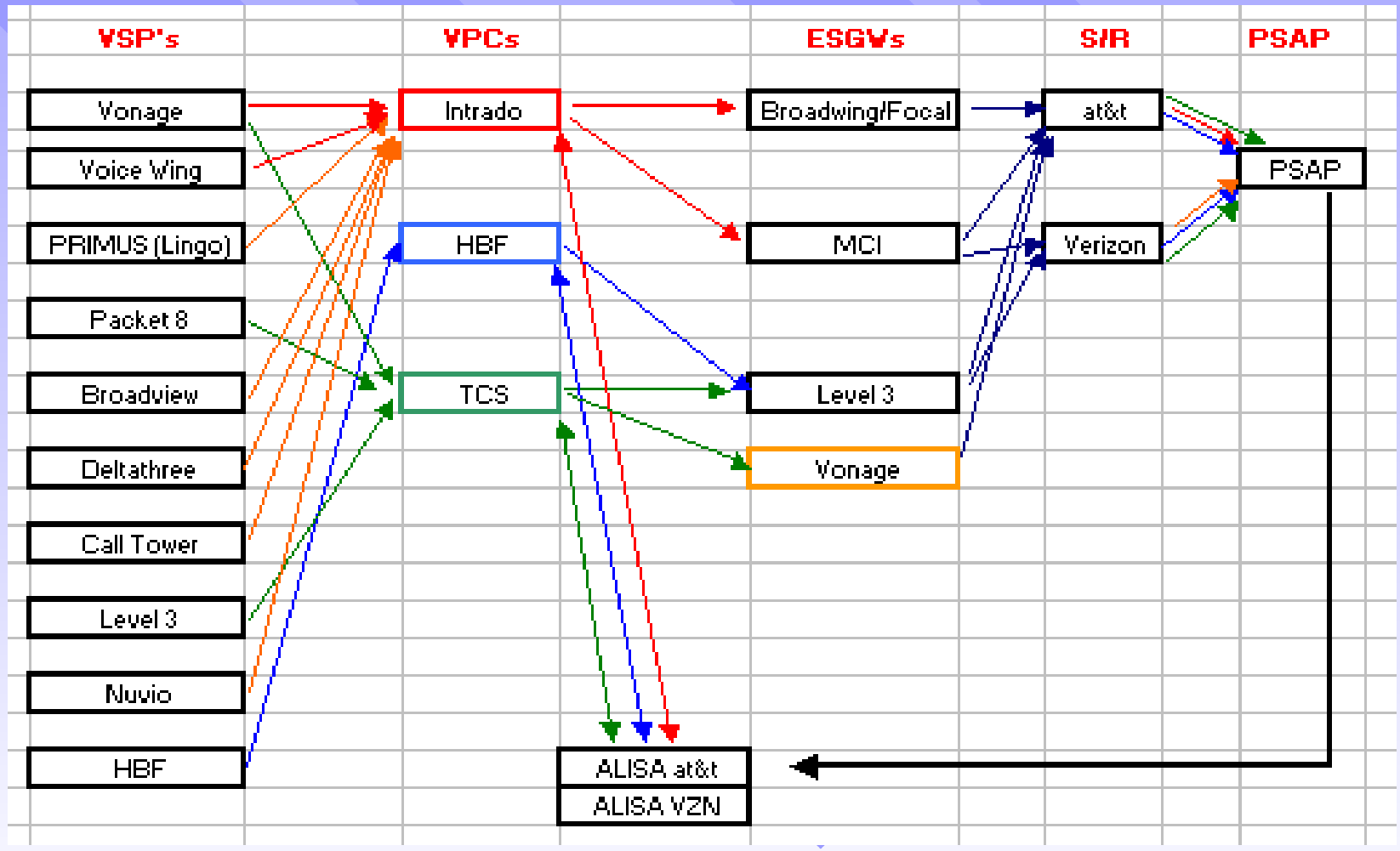
- TIA's 2006 Telecom Market Review and Forecast
  - 4.2 million subscribers in 2005.
  - 43.9% annual increase thru 2009, 18 M

- What is a VoIP call and how do you get the location information?
  - Computer accessed phone service over the internet.
  - Customer enters their location data into the screen that is then provided with the call.

VoIP E9-1-1 FCC Order

- FCC Order 05-116
  - FCC E911 Requirements to VoIP Providers
  - By Sept. 28, 2005 notification to and acknowledgement by 100% of customers of VoIP 911 limitations

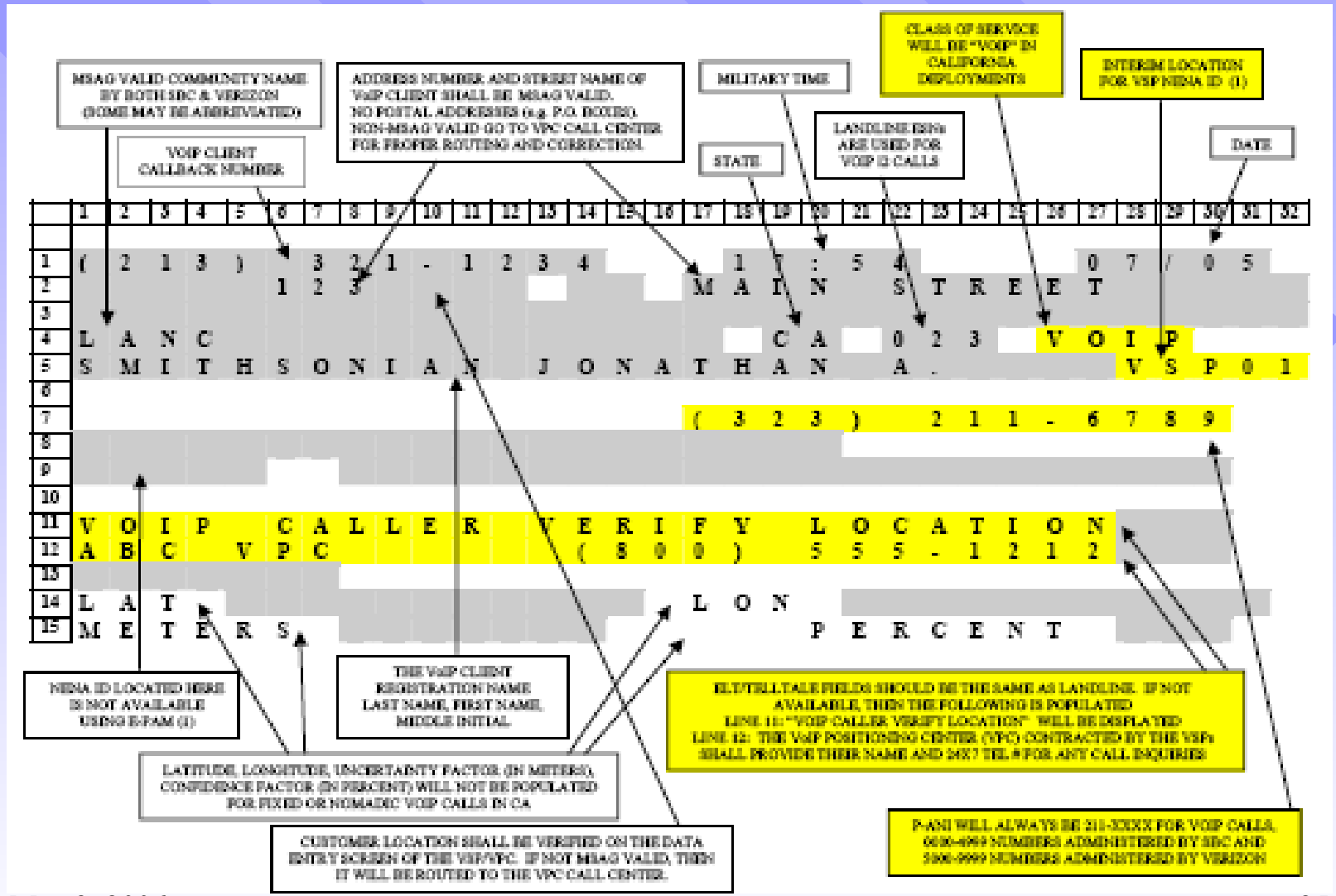
CA VoIP E9-1-1 Stakeholders



CA VoIP E9-1-1 Development

- VSP/VPC/LEC/CLEC Discussions (July 05)
- Application and Acceptance Testing (Jan 06)
- Standardized VoIP ALI Display (Jan 06)
- List of Ready PSAPs (Dec 05)
- CA VoIP Home Page

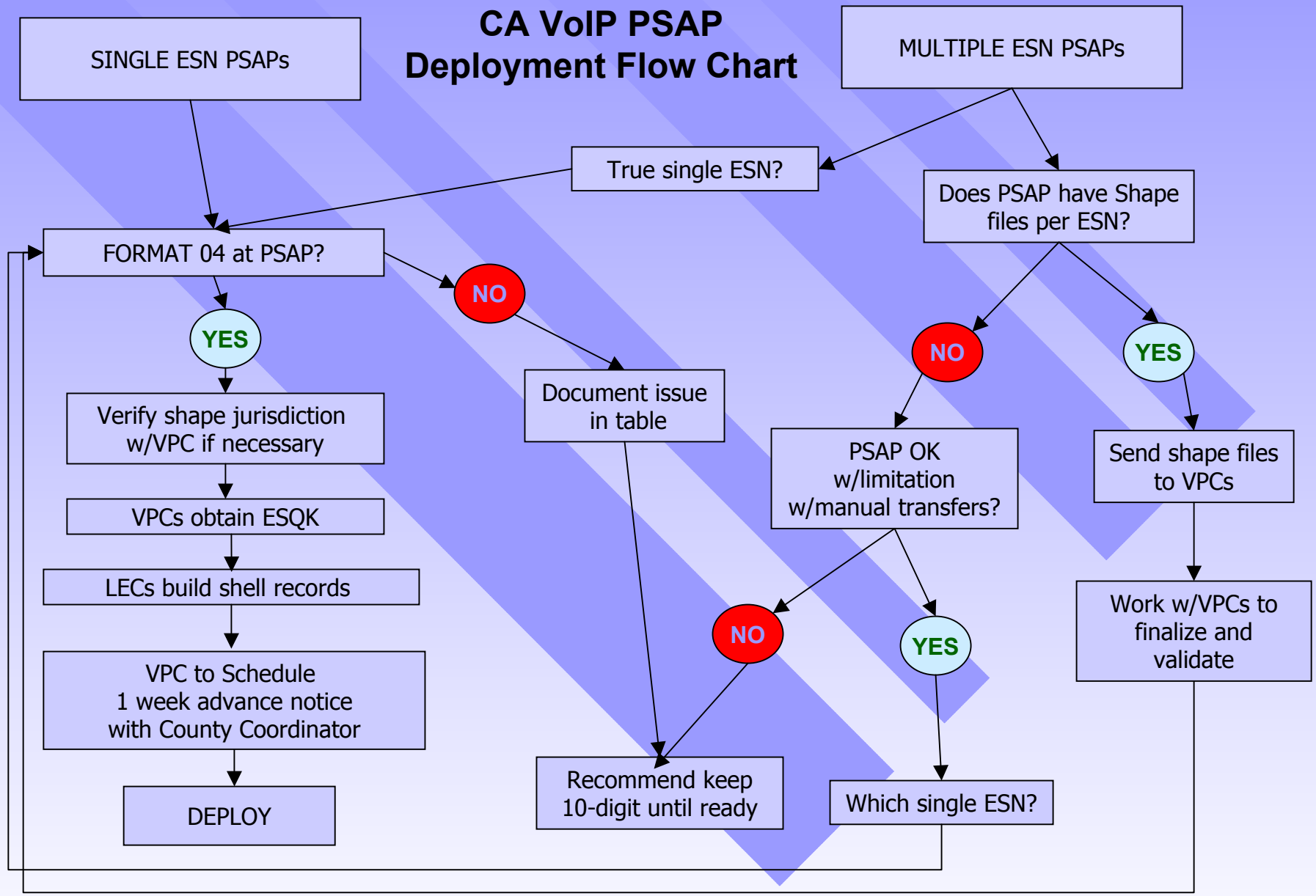
CA VoIP E9-1-1 ALI Display



CA VoIP E9-1-1 Implementation

- Statewide!
- Single-ESN PSAPs
- Multi-ESN PSAPs choosing 1 ESN with limitations.
- Multi-ESN PSAPs providing ESN level shape files.

CA VoIP PSAP Deployment Flow Chart



CA VoIP E9-1-1 Status

- # PSAPs scheduled = 140
- # PSAPs started = 100
- # PSAPs in queue = 250
- # PSAPs complete (with all 3 VPCs) = 0

CA VoIP E9-1-1 Issues

- VSP Intentionally Default Routing (resolved 3-24-06)
- VPCs use Jurisdiction Shape Files out of date (prioritizing)
- VPCs justifying ESQKs (call volume, trunks, positions)
- VPCs National Call Center Procedures under review
- More County Coordinator Responsibilities
- PSAP Testing needs to will be thorough!

CA W E9-1-1 vs. CA V E9-1-1

Topics	Wireless E9-1-1	VoIP E9-1-1
Planning	April 2002	July 2005
1st Deployment	Feb. 2003	Feb. 2006
FCC Order	94-102	05-116 A1
PSAP Participation	Choice	No Choice
CA Rollout	7 Regions	ESNs (Single/Multiple)
Database Providers	2 (Intrado, TCS)	3 (Intrado, TCS, HBF)
Service Providers	WSPs = 16	VSPs = 400
DESN	CHP	Landline DESN
ALI Display	W-ALI standard	V-ALI standard
pANI	511	211
Statewide Volume	~ 11 Million Calls	~ 500 Calls
Coordination	Wireless Regional Coordinators - 18	County Coordinators - 58
Testing	WSP Sectors (65,000)	By VPC/ESGW (9)
Network	Tandem/Tandem Trunking	Traditional
Routing	Cell Sector (general maps)	Geocoded Address (Accurate maps)
Web Site	http://www.td.dgs.ca.gov/Services/911/we911	http://www.td.dgs.ca.gov/Services/911/voip

Contact Information

CA 9-1-1 Emergency Communications Office

Wireless E9-1-1 Project Web Page:
http://www.td.dgs.ca.gov/Services/911/we911

VoIP E9-1-1 Project Web Page:
http://www.td.dgs.ca.gov/Services/911/voip

Donna Pena
donna.pen@dgs.ca.gov

William Harry
william.harry@dgs.ca.gov